CLAIMS

Composite biomaterials for bone implants

1. Composite biomaterials for bone implants, characterized for having a multiphase chemical composition including an inorganic phase made of calcium salts and another organic phase constituted by polymers or copolymers or both derivates of the vinyl acetate and the crotonic acid.
2. Composite biomaterials for bone implants, according to claim No. 1, characterized for presenting dense or porous structures indistinctly, the latter with pores three-dimensionally interconnected with diameters from 5 to 840 µm.
3. Composite biomaterials for bone implants, according to claims No. 1 and 2 characterized because the inorganic phase is constituted by calcium phosphates, hydroxide, carbonates, hydroxyapatite and carbonate-apatite or their mixtures in different proportions in which the molar ratio P/Ca varies between 0 and 99.9.
4. Composite biomaterials for bone implants, according to claims No. 1, 2 and 3, characterized because the inorganic salts can be of natural or synthetic origin, dense or porous and physically conformed in order to obtain the desired physical form either in blocks or granules.
5. Composite biomaterials for bone implants, according to claims No. 1 and 2 characterized for having in their composition a proportion of the organic phase between 0.1 and 99%, which is constituted by poly-vinyl acetate-co-vinyl alcohol composition between 1 and 25% molar of monomeric units of vinyl alcohol of molecular mass and purity similar to the one described for the polyvinyl acetate.
6. Composite biomaterials for bone implants, according to claims No. 1, and 2 characterized for having in their composition a proportion of the organic phase between 0.1 and 99%, which is constituted by poly-vinyl acetate of molecular mass between 10 000 and 250 000 D, with content of residual monomer between 0 and 100 ppm, inferior acidity to 0.5% referred to acetic acid, content of heavy metals referred to lead smaller that 20 ppm and free from peroxides.
7. Composite biomaterials for bone implants, according to claims No. 1 and 2 characterized for having in their composition a proportion of the organic phase between 0.1 and 99%,

which is constituted by composition of crotonic acid between 1 and 40% in weight of monomeric units of crotonic acid, monomer content between 0 and 100 ppm, molecular mass between 10 000 and 25 000 D and free from peroxides or mixtures of them.

8. Composite biomaterials for bone implants, according to claims No. 1, 2, 3, 4 and 5 characterized for having in their composition a proportion of the organic phase between 0.1 and 99%, which is constituted by mixtures of derivative polymers of the vinyl acetate and crotonic acid.
9. Composite biomaterials for bone implants, according to claims No. 1, 2, 3, 4, 5 and 6 characterized because the organic phase can be homogeneous and evenly distributed in the whole volume of the solid.
10. Composite biomaterials for bone implants, according to claims No. 1, 2, 3, 4, 5 and 6 characterized because the organic phase can be homogeneous and evenly distributed all over the body of the inorganic support.
11. Composite biomaterials for bone implants, according to claims No. 1 and 8, characterized because when the organic phase is covering the surface of the inorganic support, such surface is formed by successive layers ceramic-polymer-ceramic or polymer-ceramic-polymer in such a way that surfaces of contact of the biomaterial with the live tissue can be formed only by the polymer, by the ceramic or by both.
12. Composite biomaterials for bone implants, characterized for presenting different speeds of reabsorption between 10^{-5} and 3.2% per day, when it work as bone implant depending of the chemical nature and the relationship among the inorganic phases present in their composition.
13. Composite biomaterials for bone implants, characterized by their use as controlled drug delivery system when they are loaded with the corresponding drug and are implanted in soft tissue as well as in bone.